

The following papers were read :—

1. On some little-known Batrachians from the Caucasus.

By G. A. BOULENGER, F.R.S.

[Received May 4, 1896.]

(Plates XXI. & XXII.)

Ten species of Batrachians have been recorded from the Caucasus, viz. *Rana esculenta*, L. (var. *ridibunda*, Pall.), *R. macrocnemis*, Blgr., *R. camerani*, Blgr., *Bufo viridis*, Laur., *B. vulgaris*, Laur., *Hyla arborea*, L., *Salamandra caucasica*, Waga, *Molge cristata*, Laur. (var. *karelinii*, Strauch), *M. vulgaris*, L. (var. *meridionalis*, Blgr.), and *M. vittata*, Gray. To these 10 species an important addition has recently been made: *Pelodytes caucasicus*, Blgr., the second species of a genus believed to be confined to Western Europe.

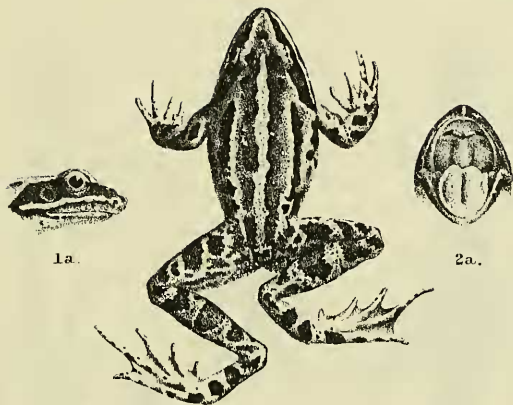
Considerable material having reached the British Museum of late, chiefly through the kindness of Dr. G. Radde, Director of the Tiflis Museum, I am able to give detailed descriptions and figures of, or notes upon, five species which are still imperfectly known, viz. *Rana macrocnemis*, *R. camerani*, *Pelodytes caucasicus*, *Salamandra caucasica*, and *Molge vittata*.

RANA MACROCNEMIS.

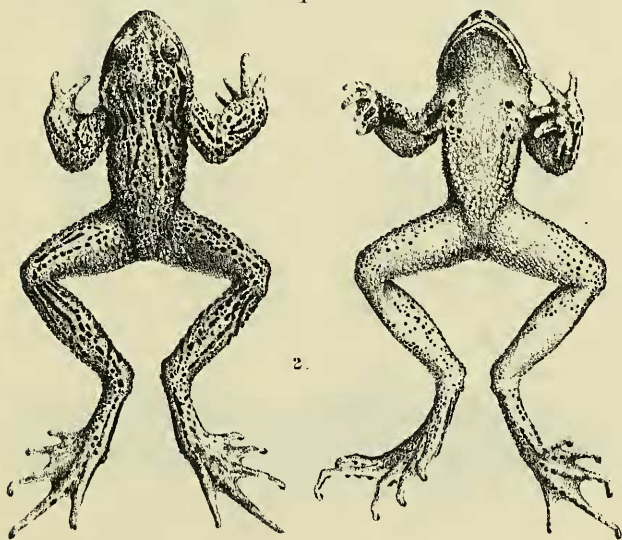
Rana macrocnemis, Bouleng. Proc. Zool. Soc. 1885, p. 22, pl. iii., and Bull. Soc. Zool. France, 1886, p. 596; Boettg. Ber. Senck. Ges. 1892, p. 136.

This species was originally described from a single male specimen collected at Brusa, Asia Minor, by the late Baron von Maltzan. It has since been recorded from near Tiflis. The following description is taken from three Tiflis specimens in the British Museum, viz. two from the Tortoise Lake, received from the Senckenberg Museum; the third from Rijut, 4200–4300 feet, presented by Hr. W. Wolterstorff, of Halle. As observed by Prof. Boettger, the snout is often more elongate than in the type from Brusa, approaching in shape that of *Rana agilis*, and the inner metatarsal tubercle a little shorter; otherwise the agreement is complete.

The vomerine teeth form two small oblique groups, close together, entirely behind the level of the choanæ. Head a little broader than long; snout rounded or obtusely acuminate, not prominent, with the lores rather oblique; nostrils nearly equally distant from the eyes and the end of the snout, the distance between them much greater than the interorbital width, which is also much less than the width of the upper eyelid; tympanum one half to three fifths the diameter of the eye, from which it is rather remote. Fore limb very strong in the breeding male, just as in *R. temporaria*, and with the inner finger provided with a still stronger pad, which is not divided by a transverse groove. The first finger extends slightly, but distinctly beyond the second.



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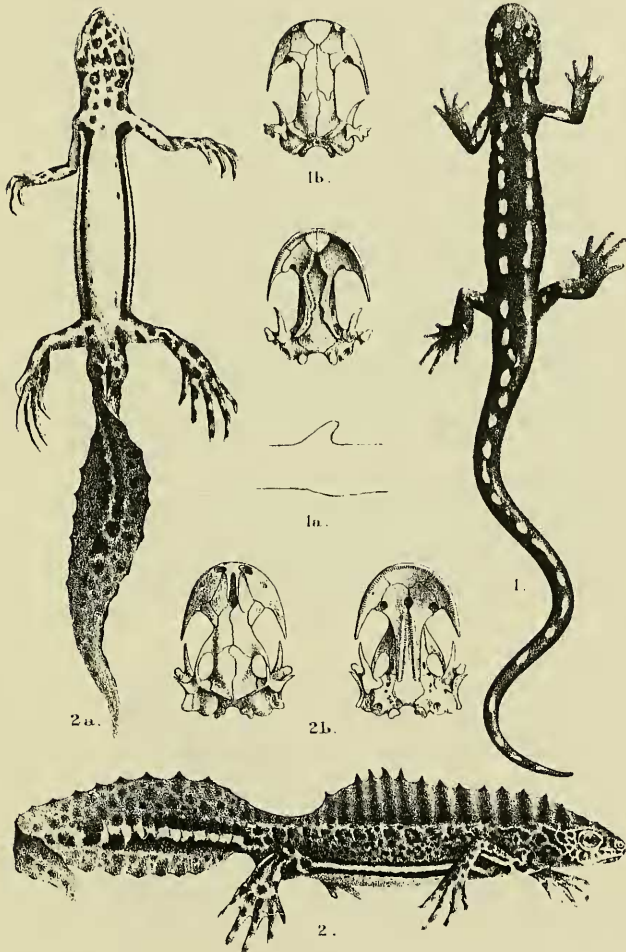


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H. Grönvold del et lith.

Mintern Bros imp.

1. RANA CAMERANI. 2. PELODYTES CAUCASICUS



H. Grönvold del. et lith

Mintern Bros. imp.

1. SALAMANDRA CAUCASICA. 2. MOLGE VITTATA

The tibio-tarsal articulation reaches the end of the snout or beyond, and the length of the hind limb between the vent and the tibio-tarsal articulation exceeds the length of head and body; the tibia is a trifle shorter than the fore limb, and nearly equals the length of the foot. The web between the toes, during the breeding-season, is developed to the same extent as in *R. temporaria*; in the male it reaches to the base of the penultimate phalanx on the inner side of all the toes but the last, which is webbed to the very tip; whilst in the female the last two phalanges of the fourth toe are free on both sides, and the distal phalanx is free on the outer side on the three inner toes and on the inner side on the outer toe. The free border of the web is deeply notched in the female, nearly rectilinear in the male. In the male *post nuptias* the palmation is as in the female. The subarticular tubercles are feebly or moderately developed; the inner metatarsal tubercle is small, oval, soft, rather more developed than in *R. temporaria* and somewhat less than in *R. agilis*; its length is not quite half that of the inner toe; a small tubercle is present at the base of the fourth toe. As in *R. temporaria*, the skin of the back in the breeding male is swollen through the great development of the lymph-cells, whilst in the female pearl-like granules are scattered on the sides, on the pelvic region, and on the hind limbs. The glandular lateral folds are feebly prominent; the distance between them, on the scapular region, equals one fifth to one sixth the length from snout to vent.

The specimens, which have been for some time in spirit, are pale brown above, with large dark spots on the back and sides, and regular cross-bars on the hind limbs; a dark canthal streak, a large temporal blotch and a dark streak along the upper lip; a more or less distinct light streak between the latter and the canthal streak. Lower parts white, with small dark spots on the throat.

As noticed before, the male is provided with a pair of internal vocal sacs.

	♂. millim.	♂. millim.	♀. millim.
From snout to vent	70	67	64
Length of head	20	20	18
Width of head	22	22	20
Diameter of eye	6.5	7	6
Interorbital width	3.5	3.5	3.5
From eye to nostril	5	4.5	4
" " end of snout . .	9	9	8
Tympanum	3.5	4	3
From eye to tympanum . . .	2.5	2	2.5
Fore limb	45	42	37
Hind limb	129	120	108
Tibia	42	38	35
Foot	41	39	35
Inner toe	8.5	8	7.5
Inner metatarsal tubercle . .	3.5	3.5	3

RANA CAMERANI. (Plate XXI. fig. 1.)

Rana camerani, Bouleng. Bull. Soc. Zool. France, 1886, p. 597; Boettg. Ber. Senck. Ges. 1892, p. 134.

First described from four specimens collected by Dr. Oscar Schneider on Lake Tabizhuri, 8000 feet, and at Achalkalki, and preserved in the Berlin Museum, this species has been rediscovered in the Karabagh Mountains, around Lake Gokcha, and near Tiflis, where it occurs together with *R. macrocnemis*. Thanks to the kindness of Professor Boettger, the British Museum has received three specimens—one male from Gilli, L. Gokcha, and two young from the C. Karabagh—in exchange from the Senckenberg Museum. Their detailed measurements are recorded below.

R. camerani is very closely allied to *R. macrocnemis*, and more material is required before they can positively be pronounced to be distinct species. The affinity to *R. arvalis* is also very great, but the small size of the inner metatarsal tubercle in *R. camerani* is sufficient for distinction.

The vomerine teeth do not differ from those of *R. macrocnemis*. The snout is more pointed and more prominent, as in a typical *R. arvalis*; the interorbital space is very narrow, one half to two thirds the width of the upper eyelid, and considerably narrower than the distance between the nostrils; the tympanum measures hardly half the diameter of the eye, from which it is separated by a distance equal to at least two thirds its diameter. The first and second fingers are equal, or the first extends very slightly beyond the second; the subarticular tubercles are strong, and the inner metatarsal tubercle is oval, measuring two fifths to one half its distance from the end of the inner toe; the web between the toes is as much developed as in *R. macrocnemis*; the male in breeding attire is, however, still unknown. The tibio-tarsal articulation reaches the eye or the nostril; the length of the hind limb between the vent and the tibio-tarsal articulation equals the length of head and body minus the whole or half the length of the snout; the tibia is as long as the foot or the fore limb. The glandular lateral folds are strong and very prominent; the distance between them, on the scapular region, equals two ninths to one fifth the length from snout to vent.

The coloration is in every respect that of *R. arvalis*, and handsomely striped specimens are also of frequent occurrence; the light monstache is strongly marked, extending from the tip of the snout to the shoulder.

	♂.	Yg.	Yg.
	millim.	millim.	millim.
From snout to vent	45	.34	32
Length of head	15	11	10.5
Width of head	16	11.5	11
Diameter of eye	5	.35	3.5
Interorbital width	2.5	2	2
From eye to nostril	3	2	2

	♂. millim.	Yg. millim.	Yg. millim.
From eye to end of snout	6.5	5	4.5
Tympanum	2.5	2	1.5
From eye to tympanum .	2	1.5	1.5
Fore limb	12	16.5	15.5
Hind limb	7.4	52	49
Tibia	24	16	15.5
Foot	24	16.5	16
Inner toe	5	3	3
Inner metatarsal tubercle	2	1.5	1.5

PELODYTES CAUCASICUS. (Plate XXI. fig. 2.)

Pelodytes caucasicus, Bouleng. Ann. & Mag. N. H. (6) xvii. May 1st, 1896, p. 406.

Vomerine teeth in two slightly oblique transverse groups between the choanæ. Head slightly broader than long; snout subacuminate, as long as the diameter of the orbit, with moderately distinct canthus; tympanum feebly distinct, two thirds the diameter of the eye. First finger as long as second; toes webbed at the base and fringed; subarticular tubercles strong; a very small inner metatarsal tubercle. The tibio-tarsal articulation reaches the tip of the snout. Body covered with strong warts, some of which are confluent into longitudinal folds; a parotoid-like fold above the tympanum. Olive above, white beneath, all the warts covered with a black horny layer in the male. Male with an internal vocal sac; the fore limbs very strong, with rugose black plates as in *P. punctatus*; similarly with black rugosities round the lower jaw, on the breast, belly, and under the limbs, especially on the subarticular tubercles.

	millim.		millim.
From snout to vent ..	47	From eye to end of snout	7
Head	15	Tympanum	3
Width of head	16	Fore limb	25
Diameter of eye	4.5	Hind limb	81
Interorbital width	4.5	Tibia	26
From eye to nostril ..	4	Foot	56

This species, described from a single male specimen from Mt. Lomis, 7000 ft., received from Dr. Radde, is very closely related to the *Pelodytes punctatus* of Western Europe, agreeing in the extraordinary development and distribution of the nuptial horny excrescences on the ventral surfaces in the males, to which attention was drawn by me in 1881 (Bull. Soc. Zool. France, 1881, p. 73, fig.). Here, however, the excrescences extend also to the warts and ridges of the upper surfaces, so that *P. punctatus* must be regarded as the Batrachian in which these temporary attributes of the males reach their highest development.

P. caucasicus is distinguished from its congener in the longer hind limbs and the slightly different disposition of the vomerine